Oncoplastic Surgery: A Creative Approach to Breast Cancer Management

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- Oncoplastic surgery • Breast cancer
- Skin-sparing mastectomy • Reconstruction

HISTORICAL PERSPECTIVE

History has proved that in most cases, the treatment of breast cancer requires surgical intervention. Since Halsted's[1] original work in the late 1880s, the surgical management of breast cancer has instilled fear in women throughout the world, and breast surgery has been considered unpleasant but a necessary evil.[2] Although the radical mastectomy accomplished local control, the advanced stage of disease often led to poor survivability; thus, surgical change was not possible until the era of screening mammography and the subsequent shift to the detection of earlier, often nonpalpable, tumors. Fortunately, since that time, significant progress has been made in the surgical management of breast cancer.

Much of this work began in the mid to late 1970s, and after decades of diligent scientific research, surgeons were able to show that less-extensive tissue resection was possible without endangering a woman's life. The two most widely recognized clinical trials supporting this hypothesis are the Milan trials and the National Surgical Adjuvant Breast and Bowel Project. After more than 20 years of follow-up for each of these studies, clinicians have learned that various portions of the breast and surrounding structures can be preserved without having an impact on survival in a negative manner. During the course of these studies, however, it also became evident that surgery alone was not sufficient, and adjuvant treatment was necessary in order to achieve success with breast conservation surgery.[3,4] **Fig. 1** illustrates the dramatic differences that result from various surgical approaches for resection of primary breast tumors, ranging from radical mastectomy to lumpectomy. Combining the process of early tumor detection with less-extensive tissue resection and adjuvant therapies allowed for the first major changes in breast cancer surgery to occur. In the

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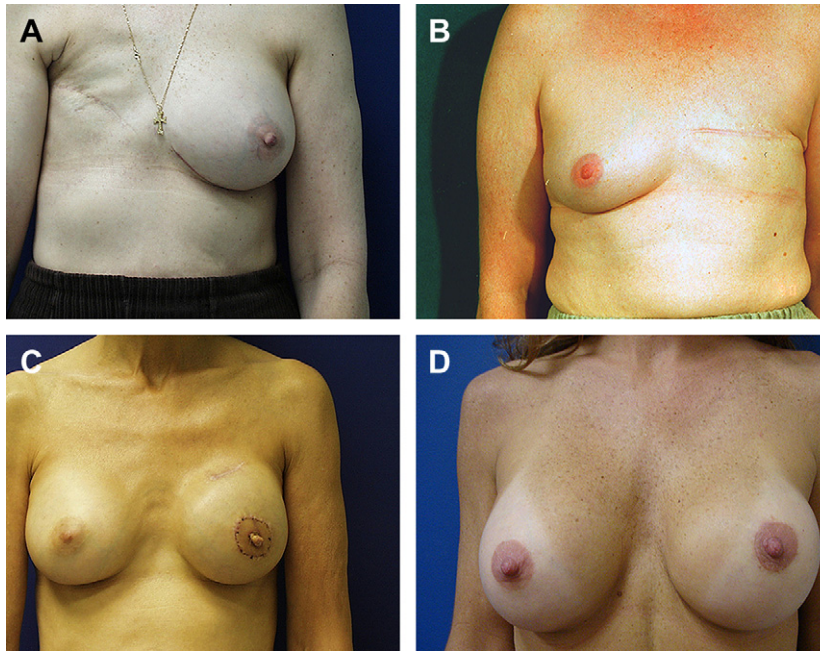

Fig. 1. (*A*) Standard radical mastectomy (note vertical skin incision). (*B*) Standard modified radical mastectomy (note horizontal skin incision, preservation of additional skin, and pectoralis major muscle). (*C*) Patient after left skin-sparing mastectomy, implant reconstruction, nipple reconstruction, and right breast augmentation mammoplasty for symmetry. (*D*) Patient after left breast lumpectomy (periareolar incision). Patient had subglandular augmentation mammoplasty many years prior to lumpectomy.

years that followed, these same advances contributed to the genesis of the field of oncoplastic, surgery, allowing for more and more creative, yet safe, surgical solutions (**Fig. 2**).[5–8]

The idea of combining knowledge from various subspecialties to create a comprehensive, individualized treatment plan was the modest beginning of the multidisciplinary patient-centered model.[9] When considered separately, the advancements over the past several decades in each field, such as radiology, surgery, medical oncology, radiation therapy, and other fields, are impressive. When taken together collectively, however, the progression within each field allowed for clinical changes that are nothing less than extraordinary.

Given the widespread implementation of less-aggressive surgical resections (such as lumpectomy and sentinel lymph node biopsy), the interaction between surgeon, radiation oncologist, radiologist, pathologist, and oncologist has become essential to achieving a good outcome. First and foremost, the objective is to design a surgical plan that does not compromise tumor resection or place patients at undo risk of local recurrence that might result in the need for multiple surgeries. The determination for how much tissue must be removed (from an oncologic perspective) cannot be separated from a thorough and complete preoperative assessment of both breasts, including consideration of breast size and shape and patient desires. In this regard, the basic principles of aesthetic and reconstructive surgery must be understood by the surgeon performing the extirpative procedure because placement of incisions